

REMARKS

After entry of the present Amendment, claims 1, 4, 6, 9, and 10-12 are pending in the application, with claims 1 and 6 in independent form. Independent claims 1 and 6 have been amended to more clearly set forth the novel and non-obvious features of the instant invention. More specifically, independent claim 1 has been amended to claim a process for decreasing the content of primary and/or second amines in polyurethane foam instead of a process for producing polyurethane foam, which was suggested by the Examiner and which more clearly conveys the ultimate result desired in the context of the claimed method, support for which can at least be found on page 3, lines 35-41 of the original application as filed. Claims 1 and 6 have also been amended to eliminate the portions thereof that previously specified that the unsaturated functionality of at least 0.1% by weight of compound (i) based on the weight of the polyurethane foam is either reacted as claimed in 1) or 2) unreacted, which was objected to by the Examiner as lacking written description support in the original application as filed. Instead, claims 1 and 6 have been amended to specify that the unsaturated functionality of “substantially all” of compound (i) is either reacted as claimed in 1) or 2) unreacted, as suggested by the Examiner, support for which is based on the fact that the role of the unsaturated functionality present in compound (i) of the instant invention is as defined by 1) and 2) in the claims with no other purpose for the unsaturated functionality to be present in the polyurethane foam. Claims 4 and 10 have been amended consistent with the amendments to claims 1 and 6 to specify that unsaturated functionality of substantially all of compound (i) is either 1) reacted in the manner claimed or 2) unreacted. Claims 1, 4, 6, and 10 have also been amended to include a proviso that at least a portion of the unsaturated functionality of compound (i) is reacted with a primary and/or secondary amine in accordance with the amended preamble to the claim of claim 1.

Claims 2-3, 5, and 7-8 were previously cancelled. New claims 11 and 12 are presently added to introduce a new step of reacting primary and/or secondary amines formed from cleavage of a urethane and/or urea bond in the polyurethane foam with unsaturated functionality of compound (i) at a temperature of from 70 to 120 °C, support for which can at least be found on page 4, lines 16-22. No new matter has been added through the instant amendments.

Claims 1, 4, 6, 9, and 10 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,114,402 to Smith. In view of the amendments to the instant claims, the Applicants respectfully submit that the instant claims are **not** anticipated by Smith. More specifically, the Applicants respectfully assert that, whereas the Examiner previously made findings that certain elements of the prior claims are necessarily present and, thus, inherent in the teachings of Smith, no such findings can presently be made with regard to the instantly amended claims.

As to the interpretation to be given to Independent claims 1 and 6, these claims expressly claim specific amounts of compound (i) that are used to make the polyurethane foams, and these claims further claim that the unsaturated functionality of substantially all of compound (i) is either 1) reacted with a primary and/or secondary amine, **or** 2) remains unreacted with a proviso that at least a portion of the unsaturated functionality of compound (i) is reacted with a primary and/or secondary amine. Independent claims 1 and 6 are clear that 1) and 2) are exclusive, i.e., that there is no other activity or other possible reaction schemes that involve the unsaturated functionality from compound (i). Thus, to be anticipated, a prior art polyurethane composition must account for the amounts of compound (i) claimed in the instant claims **with the unsaturated functionality of substantially all of compound (i) being 1) reacted with a primary and/or secondary amine or 2) unreacted and with at least a**

portion of the unsaturated functionality of compound (i) being reacted with a primary and/or secondary amine.

In view of the above, it is clear that Smith does not anticipate independent claims 1 or 6 because Smith does not teach a process of decreasing the content of primary and/or secondary amines in the polyurethane foams produced therein. Further, the unsaturated functionality is present in the polyurethane products disclosed therein for different reasons and there is no teaching to indicate that any of the unsaturated functionality present in the foams produced in Smith is reacted with a primary and/or secondary amine. Further, the Applicants respectfully submit that even if residual amounts of hydroxyethyl acrylate (HEA) present in the polyurethane products of Smith remain unreacted, there is no teaching that any of the HEA is reacted with primary and/or secondary amines and the unsaturated functionality present in the foams is subject to reaction with a polyester layer such that reaction of any of the unsaturated functionality of the HEA with primary and/or secondary amines cannot be found to be inherent within the disclosure of Smith.

With regard to the Examiner's reliance on the inherency standards to reject the instant claims, as the Examiner is aware, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. See MPEP 2112(IV.) citing *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, **may not be established by probabilities or possibilities**. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" See MPEP 2112(IV.) citing *In re*

Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). “In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” See MPEP 2112(IV.) citing *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990).

Rejection of claims 1, 4, 6, 9, and 10 under 35 U.S.C. § 102(e) as Anticipated by

Smith

With regard to Smith, an additive organic compound having an unsaturated group is reacted with isocyanate during production of polyurethane foam to form an isocyanate prepolymer having an unsaturated group. Smith teaches further reaction of the unsaturated group of the additive organic compound with a monomer-containing unsaturated polyester resin composition (see column 2, lines 36-45).

The Applicants recognize that Smith teaches all manner of ethylenically unsaturated compounds as being suitable for purposes thereof, with such compounds used in an amount of from 1 to 20% by weight based on the weight of the isocyanate of the polyurethane composition (see column 2, lines 36-47). The Applicants note that the instant claims specify a very particular group of compounds that are suitable for compound (i) as claimed and respectfully submit that the broad teachings in column 2 of Smith are insufficient to teach the instantly claimed compounds (i) with sufficient specificity. While the Examiner relies upon the teaching of hydroxyethyl acrylate (HEA) in Smith to find the instantly claimed compound (i) in Smith, it is notable that HEA is **only** disclosed as possibly being present in the specific additive organic compound used in Example 6 **and that the HEA is not the intended ethylenically unsaturated compound for purposes of Example 6 but is rather**

a residual reactant that is used to form the intended ethylenically unsaturated compound for Example 6. More specifically, Example 6 makes use of Tone M-100, which is a hydroxy polyester acrylate that is prepared by the polymerization of a caprolactone (i.e., ϵ -caprolactone) with an acrylic compound (i.e., HEA). Smith makes clear that the HEA *may* be present in an amount of **up to 10% by weight** based on the weight of the additive organic compound (see column 8, lines 1-6), **which makes clear that the HEA is merely a residual reactant that may remain after preparation of the main ingredient of the Tone M-100, i.e., the hydroxy polyester acrylate, and that the HEA may be present in amounts well below 10% by weight** based on the total weight of the Tone M-100. Such teachings of Smith suggest that the HEA would **not** be suitable for the broad ethylenically unsaturated compounds mentioned in column 2 of Smith. Therefore, it is improper for the Examiner to apply the weight ranges set forth in column 2 to the amount of HEA taught to be suitable for purposes of Smith.

The Tone M-100 *itself* is **only used in an amount of 5 parts based on the isocyanate** (refer to Column 7, line 63, which indicates that Examples 2-4 were repeated. 5 parts of the additive organic compound based on the isocyanate were used for each of those Examples). Further, the isocyanate is used in an amount of 100 parts to 86.7 parts of other components in the "Polyol Side B" (refer to the table in column 5, lines 45-62). As such, **the absolute highest amount of HEA that may be used is 0.26% by weight based on the total weight of all components used to make the polyurethane product of Smith.** In fact, because the HEA may only be present in the Tone M-100 in an amount of **up to 10%**, it is very likely that the actual amount of HEA present in the resulting polyurethane foam is well below 0.26% by weight.

As set forth above, Smith teaches reaction of the unsaturated group of the additive organic compound with a monomer-containing unsaturated resin. Thus, it is clear that at least some of the unsaturated groups of the HEA present in the polyurethane foam of Smith **must be** consumed in the reaction with the monomer-containing unsaturated resin, which falls outside of options 1) and 2) as claimed in the instant independent claims 1 and 6. Further, based on the teachings of Smith, it cannot be established that at least a portion of the unsaturated functionality of the HEA is reacted with primary and/or secondary amines (which would be necessary to inherently anticipate claims 1 and 6). In addition, it is abundantly clear that Smith does not teach that HEA having unreacted unsaturated groups is present in the polyurethane products in an amount of at least 0.5% (which would be necessary to inherently anticipate claims 4 and 10). Stated differently, one of skill in the art would not recognize the polyurethane foams taught by Smith as having HEA present in the polyurethane foams in the amounts instantly claimed **and** with the unsaturated functionality of at least a portion of the HEA being reacted with a primary and/or secondary amine as instantly claimed.

For these reasons, the Applicants respectfully submit that the inherent anticipation rejections relying upon Smith are overcome and must be withdrawn.

Additionally, with regard to new claims 11 and 12, these claims specify an additional step of essentially heating the polyurethane foam at a temperature within the specified range, which has the effect of promoting the reaction of unsaturated functionality of the compound (i) with primary and/or secondary amines in the polyurethane foam. It is abundantly clear that Smith does not teach such a step, especially prior to formation of the unsaturated polyester layer on the polyurethane foam core as taught in Smith. In particular, the unsaturated

functionality present in the polyurethane foam core of Smith is reacted with the unsaturated polyester layer such that after formation of the unsaturated polyester layer on the polyurethane foam core, the unsaturated functionality present in the polyurethane foam core does not meet the exclusive options of 1) or 2) as claimed in the instant claims.

In view of the foregoing, the Applicants respectfully assert that the present claims are both novel and non-obvious in view of the prior art relied upon by the Examiner. As such, the Applicants respectfully submit that the claims are now in condition for allowance and respectfully request such allowance.

This Amendment is filed timely; thus, it is believed that no fees are presently due. However, the Commissioner is authorized to charge the Deposit Account No. 08-2789, in the name of Howard & Howard Attorneys, P.C., for any fees or credit the account for any overpayment.

Respectfully submitted,

HOWARD & HOWARD ATTORNEYS

December 1, 2008

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